

ABSTRACT OF THE DISCLOSURE

The oral cavity is a source of sensitive biomarkers that allow the development of novel tobacco filters to reverse and eliminate acute adverse effects of tobacco smoke. Useful biomarkers are ubiquitous functional leukocytes and associated essential biochemical mechanisms, including metabolic pathways and specific enzymes, such as myeloperoxidase contained in fluid-cell lavages obtained from the human mouth. These biomarkers derived from the human mouth and sputum from the human respiratory system can be used to evaluate long-term chronic effects of tobacco smoke. A tobacco filter comprising strongly basic anion exchange resins and strongly acidic cation exchange resins with or without activated carbon, is used to detect, reduce and eliminate toxic substances from tobacco smoke while retaining taste and aroma. The novel filter in conjunction with biomarkers allow the establishment of performance standards that permit the direct visualization and measurement of acute adverse reactions caused by tobacco smoke. The measurement of these adverse effects allow a human health hazard reduction scale to be created to inform smokers of the relative "safety" of any smoking product.